

## NOTE ON SOME BRITISH COCCIDÆ (No. 7).

BY J. W. DOUGLAS, F.E.S.

ISCHNASPIS, *n. g.*

♀ scale very long and narrow, sides parallel, larval exuviae with a fringed margin, followed by two moults, of which the latter is very long: pygidium without spinnerets in groups, but having a design of irregular lattice-work, composed apparently of thickening of, or under, the integument, in that pattern.

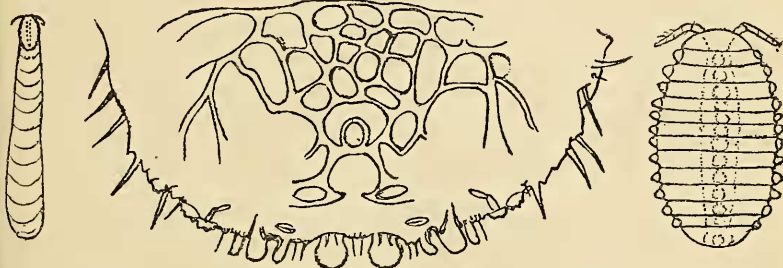
♂ scale not half the length of the ♀, of like form, but only one moult beyond the larval exuviae: imago not known.

) ISCHNASPIS FILIFORMIS, *n. sp.*

Fig. 1.

Fig. 3.

Fig. 2.



♀ scale jet-black, shining, straight, filiform (Fig. 1); larval exuviae oval, small, ochreous, with a concolorous, small, flat, angularly-lobate marginal fringe (detached, Fig. 2); the third pellicle at least twice the length of the second, widely rounded at the extremity, the successive minute increments of development perceptible throughout the scale: pygidium occupied with a lattice-work formation of irregular pattern, similar but not quite identical in all examples, yet on the posterior portion always alike; a few isolated spinnerets near the margin: posterior margin with two median, distant, large, posteriorly rounded lobes, then on each side one smaller curved outwardly, and then another larger, but not so large as the median, with a small one adjoining; some small spines between the lobes and five or six large ones beyond, the margin there having dentate plates (Fig. 3).

Length, 3—3·5, breadth, 0·40 mm.

♂ scale narrower and not half the length.

The figures are from photo-transfers of camera-drawings by Mr. G. S. Saunders.

Altogether one of the most remarkable forms of *Diaspina* that I know, both in respect of the scale and the character of the pygidium.

Abundant in the conservatories of the Royal Botanic Society on the leaves of various palms, *Strychnos*, *Myristica*, and other plants, looking like little bits of silk thread accidentally affixed.

## MYTILASPIS PINNÆFORMIS.

*Aspidiotus pinnaformis*, Bouché, Stett. ent. Zeit., xii, 111, 5 (1851).

*Mytilaspis pinnaformis*, Sign., Ess. Coch., p. 141, pl. vi, figs. 4 and 8.

♀. Scale elongate, straight or curved, mussel-shaped, flat-convex transversely, yellowish-brown, the margin distinctly white, the larval exuviae about one-fourth of the entire length, concolorous or darker, also with a white margin, the next pellicle very long. Bouché says (*l. c.*) "Similar to *A. pomorum*, but smaller, flatter, smoother, and with a broader, paler margin;" to which may be added the colour is much lighter. Length, 3 mm.

♀ adult long, flat, yellow; the sides posteriorly serrate; the last segment with five groups of spinnerets—anterior 4, anterior lateral 5, inferior lateral 4, each, between them and near the posterior margin many isolated spinnerets; the margin has two trifoliate median lobes, followed on each side with two much smaller, and six or seven spines.

♂ scale not half the length of the ♀, straight.

♂ imago small, yellowish-white, the transverse band of the metathorax dark, antennae and legs pubescent, abdomen short (Signoret).

On a leaf of the orchid *Cymbidium pendulum*, received from the Royal Gardens at Kew, was a numerous colony of the scales in all stages of existence. Bouché states that his examples were on *Cymbidium aloifolium*; Signoret says on "*les Cymbidium*;" the species probably lives on various orchids.

#### POLIASPIS CYCADIS.

*Poliaspis cycadis*, Comstock, Report for 1883, p. 126, fig. 15.

♀ scale snowy-white, larval exuviae yellowish; greatly widened posteriorly as in ♀ *Chionaspis*. Size in the adult state varies considerably; the average may be stated as, length 3, breadth 1.75 mm.

♀ adult greenish-yellow, oval; the five ordinary groups of spinnerets containing, anterior 2—4, anterior lateral 8—13, posterior lateral 18—25 each, the three superior groups each with 2—4 spinnerets; median lobes of the margin prominent, outwardly serrate, 2nd lobe deeply incised: plates slender and cylindrical, one at the side of 1st and 2nd lobes, and four or five on the lateral margin of the three or four preceding segments: two spines between the median lobes, and a few others on the margin.

♂ scale snow-white, small, narrow, parallel-sided; exuviae at one end; surface slightly convex transversely, no carinae. Length, 1 mm.

I have not seen a ♂ imago. It is described as "bright orange-red, with thoracic band of same colour; eyes black; first five segments of antennae purplish-red, the other five yellow" (Comstock).

Maskell (Trans. N. Z. Inst., xii, 293, 1879) instituted the genus *Poliaspis*, an offset of *Mytilaspis*, and characterized it as "having the spinnerets in more than five groups, and in a double row, the edge of the abdomen as in *Diaspis*. Signoret forms a genus *Leucaspis* which possesses the same characters, but it has also a fringe of spiny hairs set close together round the edge of the abdomen, which fringe is absent in *Poliaspis*."

Comstock (*l. c.*) says of *Poliaspis*—"I am far from feeling sure that the genus will prove to be a natural one." The same may really

be said of many other so-called genera; the term "genus" being an abstract ideality to express certain forms or conditions of variation; but while such a group or individual, by its or their segregation, may sometimes serve the purpose of classification, science is always encumbered with the names.

In the month of February I received from the Royal Gardens at Kew some pieces of the bark of *Cycas revoluta* with some of these scales attached, all more or less covered by and involved in the fine short brown fibre which is natural to the plant, and which frequently interferes with the development in regular form of the ♀ scale.

### DIASPIS ROSÆ.

*Aspidiotus rosæ*, Bouché, Naturgesch. d. schäd. und nütz. Garten-Insecten, p. 53, 2 (1833); *id.*, Naturgesch. der Insecten; p. 14, 2, pl. i, fig. 6 (1834); Burm., Handb., ii, 68, 2 (1835).

*Diaspis rosæ*, Sign., Ess. Cochin., p. 123, pl. v, fig. 3 & 3a; Maskell, Trans. N. Z. Inst., xi, p. 201, pl. vi, fig. 9 (1878); Comstock, Report for 1880, p. 312, pl. v, fig. 1, 1a, & 1b; pl. xvii, fig. 1; pl. xxi, fig. 5; Goethe, Jahrb. d. Nassau. Ver. f. Naturk., 1884, p. 116, T. 1, fig. 7, 8, 10.

♀ scale rounded-oval, nearly circular, white, the yellowish larval exuviae towards one side. Diam., 2—3 mm.

♀ adult elongate, anteriorly broad, red, posteriorly yellow, segments distinct, each with spinose plates at the sides, on the last are five groups of spinnerets nearly or quite connected, especially the laterals, anterior with 20, anterior and posterior laterals with 25—30 each, besides some isolated spinnerets; margin with two oblique median lobes, narrowly separated at base, two others on each side deeply incised, thence, up to the preceding segment, five or six spines.

♂ scale very small, narrow, tricarinate. Length, 1 mm.

♂ imago orange-red, wings white, antennæ and legs yellowish, slightly pubescent.

As the author of the original name of this species, *Aspidiotus rosæ*, Signoret (Ess. Cochin., p. 67) gives Sandberg (1784), and in this he has been followed by other writers, but both the generic and specific names were first given by Bouché (*l. c.*), Sandberg having referred to the insect only as the "Schildläuse des Rosensträuchers."\* His article on its natural history, considering the time at which it was written, is full and precise, and has some graphic touches, as, for instance, where he says the insect being one of the smallest (requiring a magnifying glass in order to observe it), yet the ♀ has, in proportion, an enormous scale (ungeheuer Schild). The history ends moralizing, thus: "This is the biography of a creature whose world consists of two inches of a little branch of a rose-bush, and it accomplishes what most men do: werden, vermehren sich und—sterben."

\* Naturgeschichte der Schildläuse des Rosensträuchers; von K. v. Sandberg: in Abhandlungen eines Privatgelehrten. Boehmen, vi, 317 (1784).

The species is not rare on the continent of Europe, and all authors state that it is found on cultivated roses. Bouché says that it lives on the stems and old shoots, which at times are quite covered with the scales, making them appear as if mouldy, and that if not removed (the best way of doing so being by means of a hard brush) the bush is killed by them. Signoret makes a similar remark. Comstock says the species is very common on roses, both in the Southern and Northern States of North America, and that he also finds the scales on raspberries and blackberries (*Rubus*). Maskell finds it on garden-roses in New Zealand. Walker includes the species in his list of British *Coccidæ*, and I have often sought for the scales, both on garden and wild roses, but in vain. On March 1st Mr. Parfitt sent from Exeter some old ♀ scales which he had just found on the stems of a wild rose (*Rosa canina*), and on bramble stems, growing in a hedge, and these were assuredly the ♀ of *Diaspis rosæ*; and on the 5th following he found some of the ♂ scales. He thus writes: "Since my first visit I find the hedge has been cut down to within a foot of the ground. However, I secured a branch of the rose and was pleased to find a few male scales. I could find no scales on the young branches, only on the old stems. This appears to be a scarce species, as I have walked past miles of hedges within the last two years, but have seen these scales in two places only, and the one just mentioned is likely to be destroyed."

#### PULVINARIA MESEMBRYANTHEMI.

————— *mesembrianthemi*, Vallot, Bull. de Férussac ii, p. 469 (1830).

*Calypticus mesembrianthemi*, Costa, Ann. d. Acad. Asp. Nat. Naples, 273 (1844).

*Pulvinaria biplicata*, Targ.-Tozz., Catal., p. 34 (1868).

*Pulvinaria mesembrianthemi*, Sign., Ess. Coch., 215.

The synonymy comes from Signoret, *l. c.* The genus adopted by Vallot is not given, and I cannot refer to the original. *P. biplicata*, Targ.-Tozz., cited by Signoret as a synonym, was not described; it was only denominated "n. sp. (*Mesembrianthemi acinaciformis* incola)."

♀ scale, adult. Ovate, yellowish-brown, slightly convex, with three or four strong corrugations across the middle, often, however, in the most advanced condition, the dry scale is also contorted or bent backwards. Underneath, and projecting posteriorly, is a large, long, white ovisac, smooth above, but otherwise composed of loose, tangled, cottony filaments, among which are the yellow eggs and larvæ. Antennæ of eight joints, the 3rd longest. Length of scale 4—5, breadth 3—3.5 mm.

In the young stages and up to the time of the formation of the ovisac, the entire insect is delicate pale green and the scale is smooth; the colour becomes gradually brown, and the transverse folds then also first appear, developing as the scale becomes dry.

On a small piece of a *Mesembryanthemum* imported from Spain, received from Dr. W. H. Lowe, Wimbledon, in April, was a numerous colony of this species in all stages of existence.



## LECANIUM TESSELLATUM.

*Lecanium tessellatum*, Sign., Ess. Cochin., p. 231, pl. 11, fig. 4.

♀. Scale flat-convex, short broad-oval, much widened posteriorly, a little narrowed anteriorly, one side usually straighter than the other, or somewhat curved inwardly, and sometimes with one or two slight incisions; pale greenish-yellow, covered with dark-lined irregular reticulation or tessellation, each mesh containing numerous dark dots more or less in rows, the middle of the disc occupied by a long, wide, irregular sided space. This is the immature form and is the *L. tessellatum* of Signoret. In a still younger state the scale, although of full size, is flat, without marking, colourless and transparent. The mature form, more convex than in the immature, foveate-punctate; along the middle of the back a broad, flattened, black ridge, from which, on either side, the black colour extends downwards all round, more or less suffusing two or three rows of meshes, and often forming a well-defined blotch, but leaving a space of two rows of clear reticulation between it and the margin; within the bounds of the blotch four or five transverse furrows, the broad intervening spaces flat, each having at its lower end a pale spot; anal point above the cleft yellow. Under-side, body anteriorly white, posteriorly black; legs and antennæ pale, the latter of seven joints, the 3rd twice as long as the 4th, 6th and 7th still longer.

Length, 3·5, breadth, 3 mm.

Young larvæ under the mature scales. No ♂ scales seen.

At p. 77, vol. xxiii, I have mentioned this species, then known to me only by Signoret's description and figure, in comparison with *L. alienum*, and I can now confirm the differences there stated.

Received from Mr. Sowerby, Royal Botanic Society's Gardens, on *Sapindus saponaria*, and from Mr. J. O'Brien, Harrow, on the same plant, in all stages of existence on a leaf.

## LECANIUM ANGUSTATUM.

*Lecanium angustatum*, Sign., Ess. Cochin., p. 228, pl. 11, fig. 2.

♀. Scale clear yellow, elongate, narrow, flat (sometimes with a tendency to a median blunt carina), smooth, shining, sides nearly straight and not recurved, both ends rounded. Under-side all pale; antennæ of seven joints, 3rd and 4th longest; tibiæ canaliculate, the tarsi, when viewed obliquely, appear flattened and broader than the tibiæ. Eggs and larvæ within the body.

Length, 4·5—5, breadth, 2 mm.

Except as to the slight indication of a median keel this agrees exactly with Signoret's description of *L. angustatum*, which was found on *Papyrus*. My specimens came from leaves of *Anthurium Scherzerianum*, a native of Costa Rica, received from the Royal Botanic Society's Gardens, Regent's Park, in January and February last.

## THE MALE OF LECANIUM HESPERIDUM.

In the "Comptes rendus des Séances de l'Académie des Sciences" (Paris), No. 7, Feb. 14, 1887, p. 449, is an article entitled "Les mâles

du *Lecanium hesperidum* et la parthénogénèse," by M. R. Moniez. The author premises that sexual dimorphism is ordinarily present in the *Coccidæ*, the males, contrary to the females, being winged and undergoing complete metamorphoses, yet that in many species they are hitherto unknown, although the females are continually reproductive. Among the species having this character *Lecanium hesperidum* is always cited, and Leydig and Leuckart are specially mentioned among those who have in vain sought for the males. Then he continues :—

"But this species is by no means parthenogenetic; at least, I have found males in abundance in nearly all the numerous females from different localities that I have examined. I have always found each one isolated in an ovarian *cul-de-sac*, those containing males appearing to be mixed with those containing larvæ of the females."

The author then states that he observed several stages of development. In the first there are no external organs, the body appearing to be entirely occupied by the "follicules testiculaires," as yet not differentiated, the integument very thin. The second stage is distinguished by having five or six folds of the enveloping membrane, which doubtless correspond to the segments; the evolution of the spermatozooids is effected, the testicles are clearly distinguished, compressed by the development of the rudiments of the organs. At the third stage, which represents the perfect insect, all the salient organs which characterize the adult are present. But the young male has no trace of eyes, and its skin remains very tender, strongly contrasting with the chitinous integument and the well-developed eyes of the young females, which are found at the same time in the body of the mother.

The summary of these observations is thus given :—

"The male of *Lecanium hesperidum*, among all those hitherto known, is therefore characterized by its minute size, the form of the penis, the absence of eyes and wings, the character of the integument, and the development of the spermatozooids before the appearance of members, at a stage which doubtless corresponds to that of pupa."

Then follows a statement of the progressive development of the organs, leading to the conclusion that—

"The organization of the male does not permit a doubt that there is pairing, but I have not been able to decide if it takes place within or without the body of the mother. I could not find a male outside of the mother, not even under her body, but its imperfect condition rather induces me to suppose that the females are fecundated within the maternal organization.

"If, however, we consider that the spermatozooids are mature in *Lecanium hesperidum* at the time when the males are yet without relative organization, we

cannot but think that there is here a transitory state, or even a still lower degree of development, which may be definite in some species of the same family or any other group. We may even conceive that the males may be rudimentary in such a manner that they may be reduced, in the body of the mother, to sexual elements, and thus there may be produced there a kind of false hermaphroditism; they might even be represented in the lowest degree by undifferentiated elements, but which, nevertheless, come into connection with the ovules; it may thus happen that the so-called *pseudova* may be identical, in their evolution, with ordinary eggs, and, as in the known hypothesis in connection with agamic *Aphides*, that the development of the ovules was determined by the hermaphroditism of the females. Be this as it may, as the males escape observation in every case, one cannot fail to infer that parthenogenesis or pedogenesis, which is a form of it, exists. In fine, we conceive that these reduced males may be able, in certain seasons and under certain influences, in consequence of a more retarded evolution of the genital products, to acquire a perfect development and exhibit normal characteristics.

"It appears possible to apply these considerations, until there is proof to the contrary, to the various parthenogenetic animals, with the exception, perhaps, of certain *Hymenoptera* among which the phenomena are more complicated. Parthenogenesis constitutes a peculiar fact which hitherto has not received sufficient explanation, and it may be, that like many other facts apparently aberrant, it will one day come under the general law of sexual reproduction."

The discovery of the male of *Lecanium hesperidum*, although the mode of action or influence of this sex has yet to be elucidated, is of itself of very great interest, and in the inferences and suggestions arising from it, with respect to the recondite subject of parthenogenesis in general, has a significance and importance not exceeded by any revelation of modern science.

#### LECANIUM DEPRESSUM.

*Lecanium depressum*, Sign., Ess. Cochin., p. 269, pl. 12, fig. 11, 11a, and 11b.

♀. Scale convex more or less according to age. Form broad-oval or ovate, sometimes one side nearly straight, or incurved so much that the outline is subreniform or subpyriform. Colour pale greenish-yellow; a black or dark median line, not carinate; the disc with black dotted lines disposed so as to form marquetry, in the mature form these coalesce and make patches, but leaving the ground colour clear in places, usually two anterior and two posterior; lower down straight dotted lines radiate to the margin all round; on the anterior half on each side two distinct dark-dotted carinæ with pale ends extend to the margin, the posterior ones nearly at a right angle, the anterior oblique, all of them corresponding to the legs beneath. Under a high power the surface is seen to be covered with a reticulation of irregular, shallow cells, and the black dots are resolved into spots with a pale centre or ocellus, each spot, situate in a mesh, appears as an inlaid plate of tessellation. Anal point yellow. Under-side all pale, except the abdomen, which is black. Antennæ of eight joints, the 3rd longest.

Length, 4, breadth, 3.5 mm.

This description differs from that of Signoret in that he gives the colour of the scale as brown, which does not occur, in my experience.

until the insect is nearly or quite dead, and then the markings have disappeared. He also states that scales he received from Florence (which I take to have been the typical form) were oval, a little elongated anteriorly, and having two depressions in the region of the lateral carinæ (as appears in his figure 11): this form I do not find. At first I was inclined to describe my examples as a new species, under the name of *L. simulans*, but as the other characters given are present, and in view also of the variation admitted by Signoret, I have concluded that there are scarcely sufficient grounds to establish a distinct species. Yet it may be that if one had all the forms before him contemporaneously, two or three good species might be determined.

Signoret attributes the name *depressum* to Targioni-Tozzetti ("Studii sulle Cocciniglie," p. 29, and "Catalog," p. 37), and doubtless correctly, but as in neither place is the species described, the reference cannot be cited: Signoret really first described the species.

I had the scales, in April and May, from Mr. S. Stevens, on leaves of *Ficus elastica* and camellias, and from other sources on leaves of camellias. Signoret obtained his examples from Florence on leaves of *Ficus marticinensis*, and in Paris on *Ficus elastica*. Maskell finds the scales in greenhouses (the plants not mentioned) in New Zealand, stating it is an imported species. (Trans. N. Z. Inst., xi, 206, 1878).

#### LECANIUM FILICUM.

*Chermes filicum*, Boisd., Ent. Hort., p. 336.

*Lecanium filicum*, Sign., Ess. Cochin., p. 266, pl. xii, fig. 8.

♀. Scale short, broad-oval, very convex, smooth, with two anterior and two posterior slight blunt carinæ going rather obliquely from the back to the margin, thus interrupting the curve of the contour, and sometimes two or three short and sharp vertical carinæ at the sides joining the margin, which is broad and flat. Antennæ of eight joints, the 3rd the longest. The articulation of the tarsi with the tibiæ is very distinct, as Signoret observes. When alive the colour is reddish-brown, becoming paler or yellowish after death.

I have long known this species from various cultivated ferns, but could not determine it with certainty; for while Signoret (*l. c.*) says "celle-ci offre des carènes dorsales," his figure shows the carinæ to be obliquely transverse across the sides. However, having received some scales from Dr. Signoret, I can now identify the species. It is like *L. hemisphæricum* in having a flattened margin, but is distinguished from it in having carinæ, and, as a rule, it is smaller. It is also related to *L. hibernaculorum*, which is larger, darker, and without margin.

8, Beaufort Gardens, Lewisham :  
May, 1887.